

Fig. 1A (Encoder)

2/15

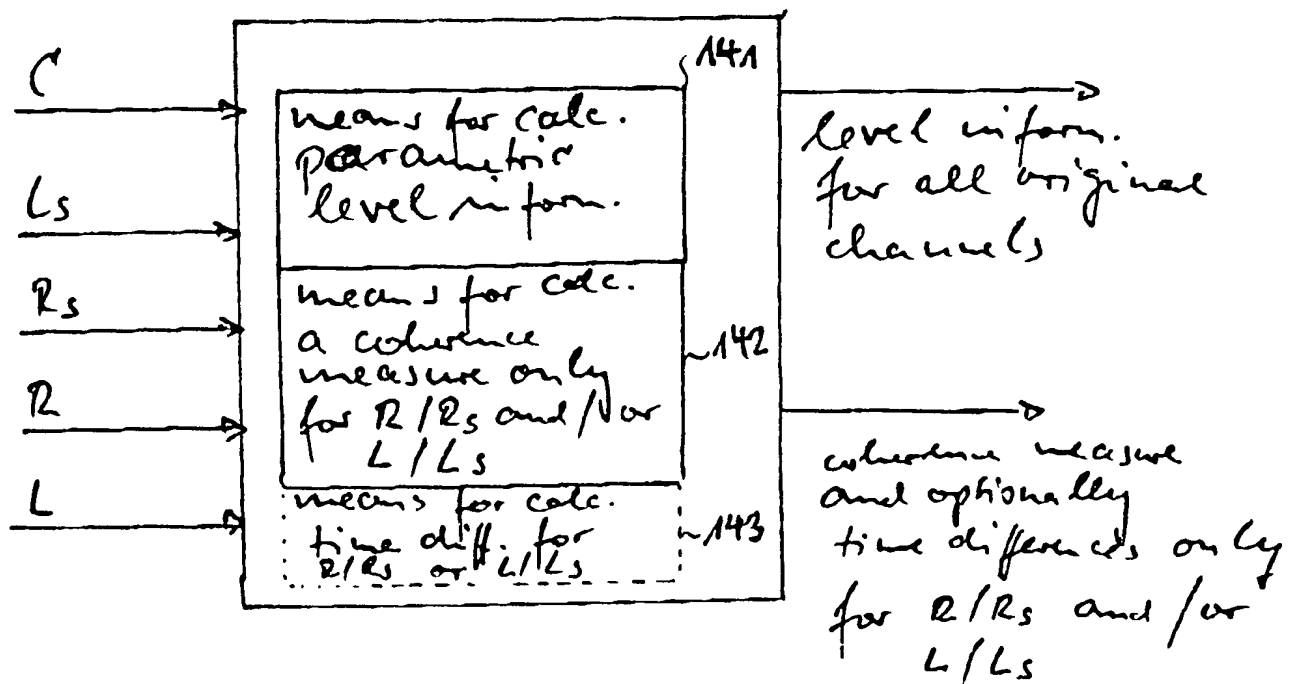


Fig. 1B

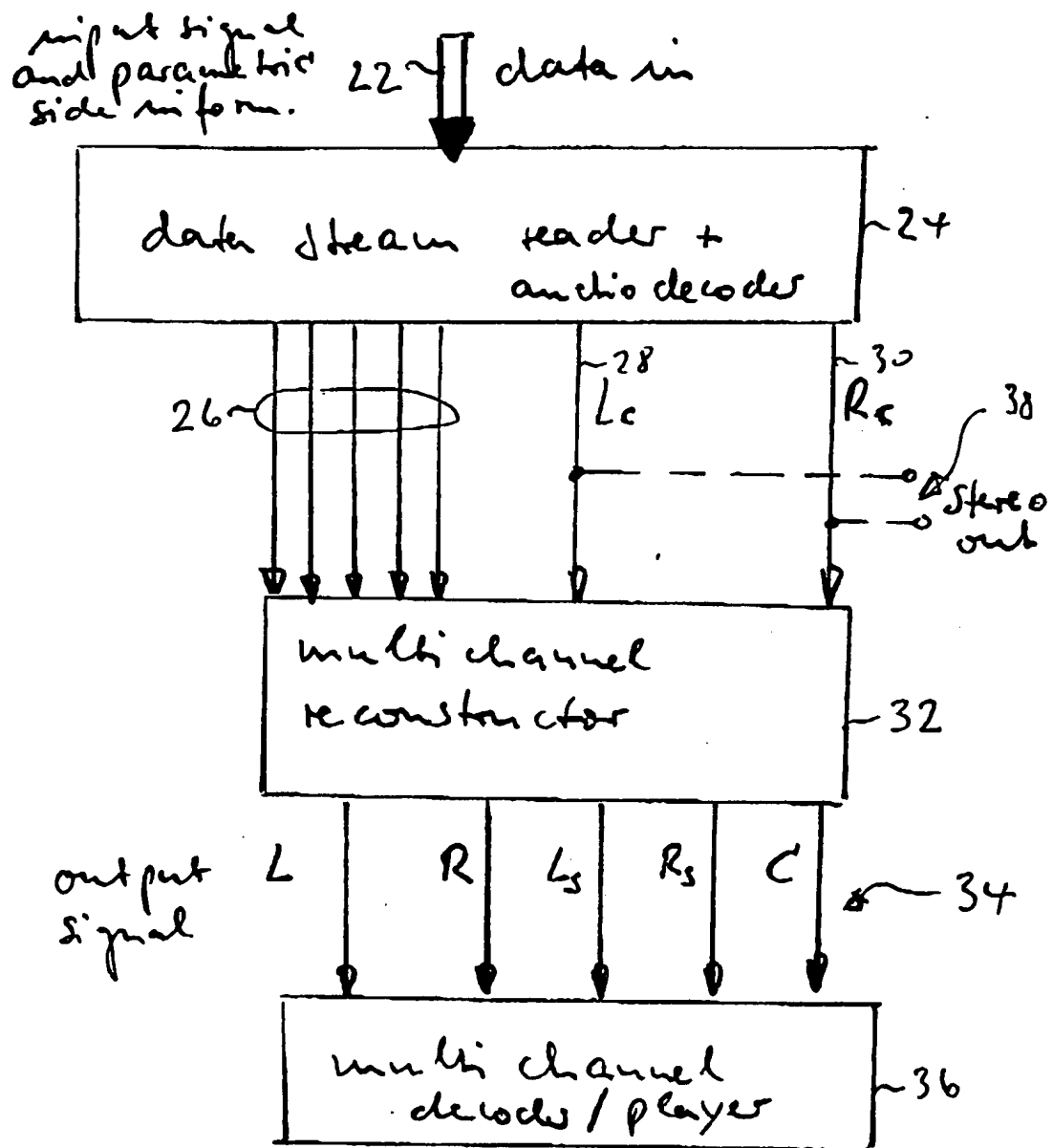


Fig. 2A(Decoder)

4/15

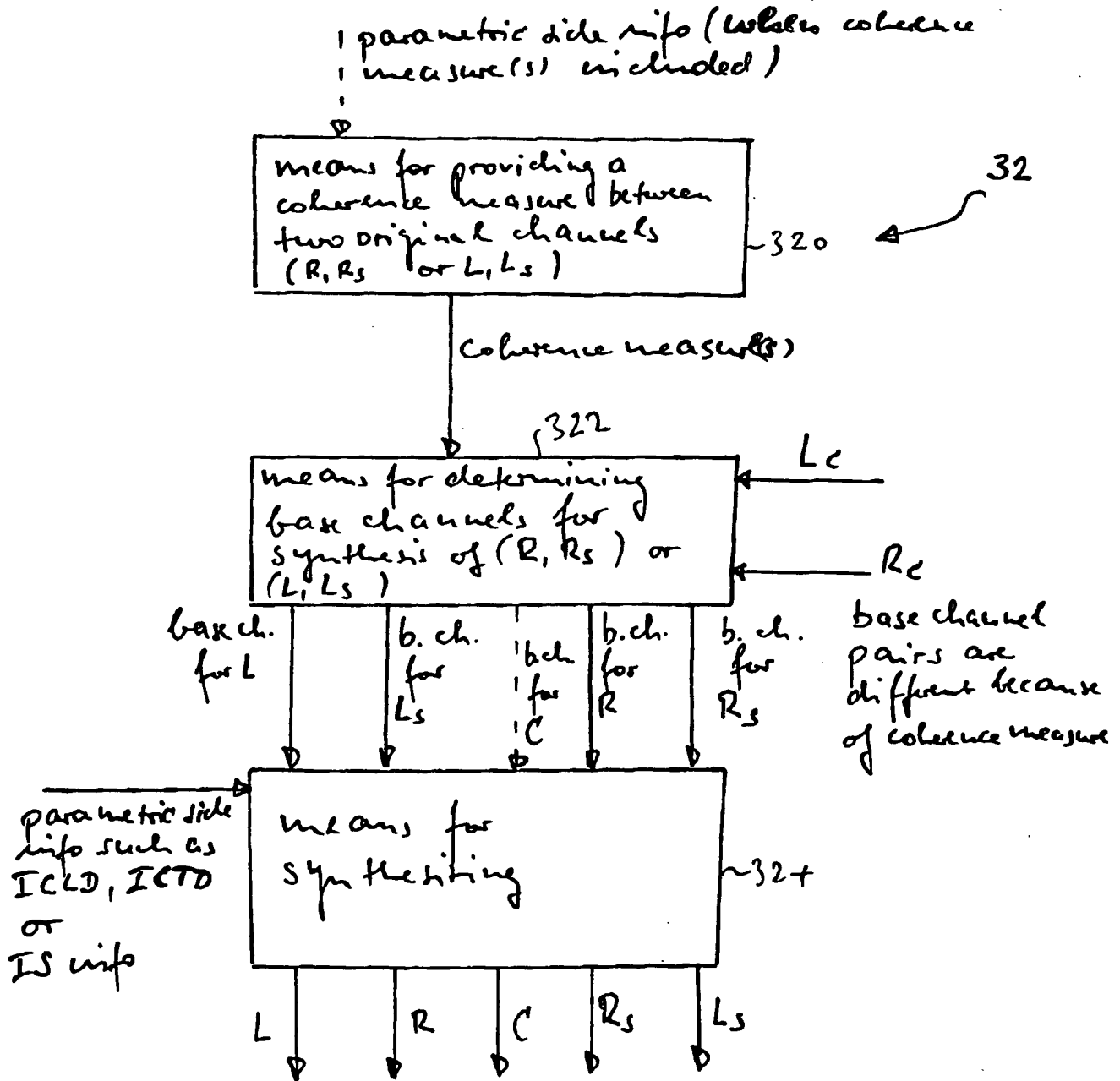
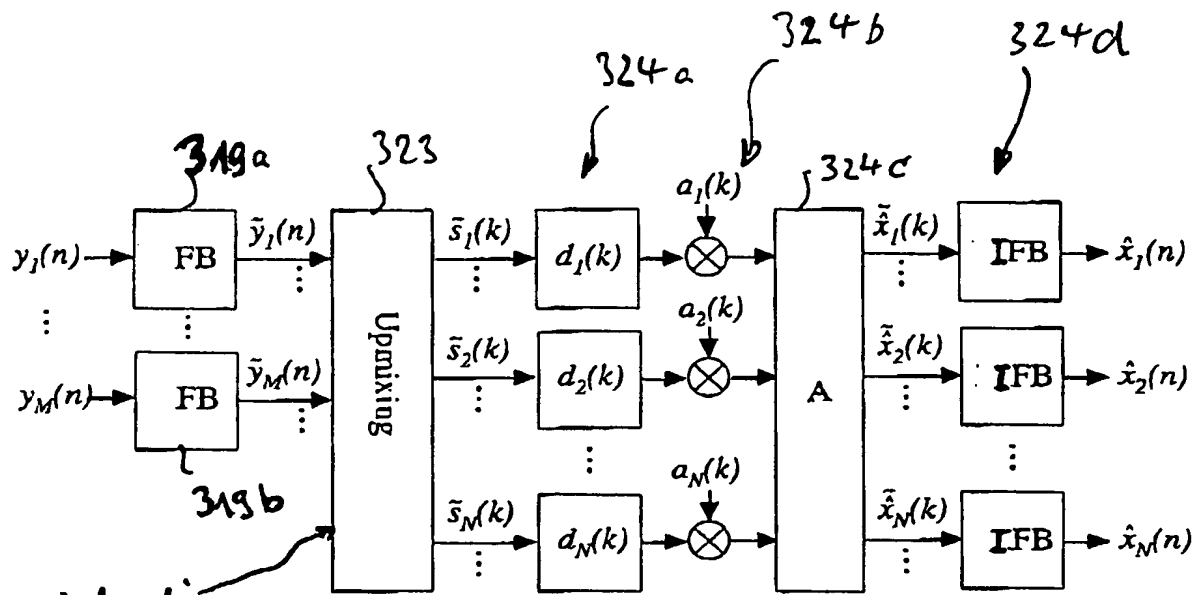
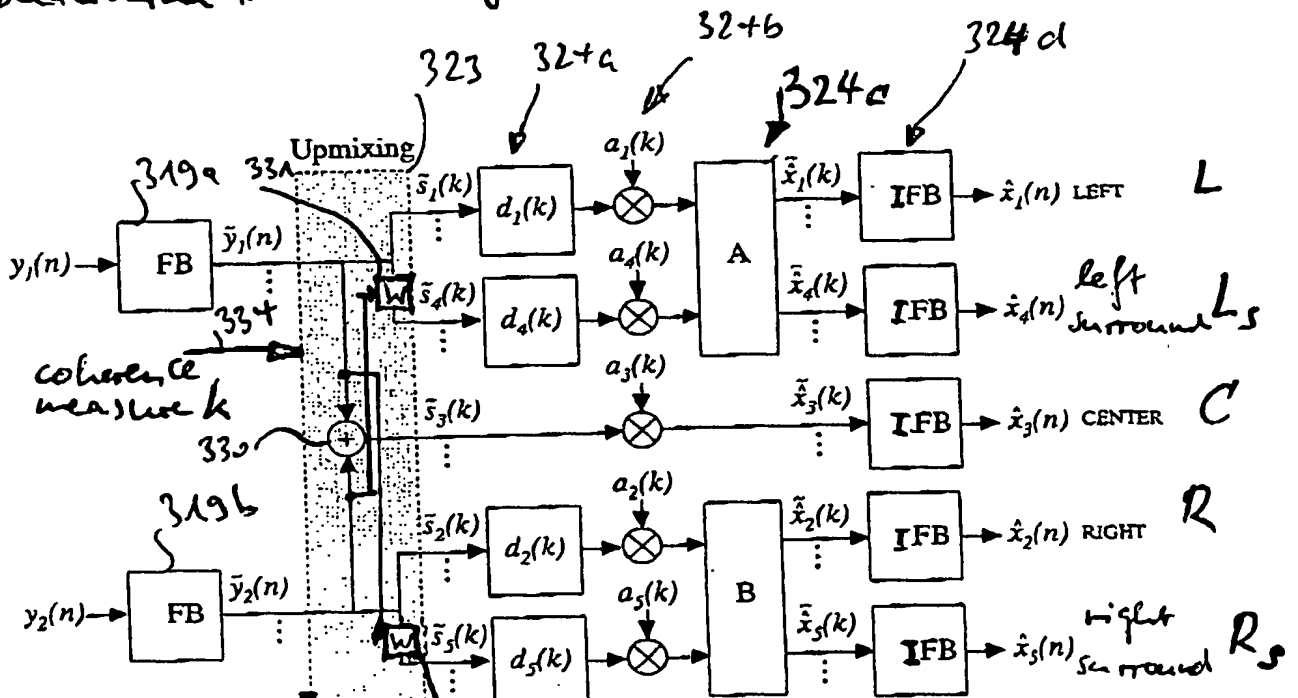


Fig. 28



including
base channel
determination

Fig. 2C



including base
channel determ.

Fig. 2D

FIVE-CHANNEL EXAMPLE

6/15

means for determining
coherence measure

$$cc(x, y) = \frac{\sum_i x_i \cdot y_i}{\sqrt{\sum_i x_i^2} \cdot \sqrt{\sum_i y_i^2}}$$

cc: coherence measure
(cross correlation)

x_i : sample at time
instance i of first
original channel

y_i : sample at time
instance i of 2nd
original channel

Fig. 2E (encoder side)

base channel for left ^(L) output channel: $l \hat{=} L_c$

base channel for rear left (L_s) output ch.: $l + \alpha \cdot r \hat{=}$
 $L_c + \alpha \cdot R_c$

$$k = cc(l, l + \alpha \cdot r)$$

$$\frac{\sum l \cdot [l + \alpha \cdot r]}{\sqrt{\sum l^2} \cdot \sqrt{\sum [l + \alpha \cdot r]^2}} = k$$

$$-1 \leq k \leq 1$$

α : weighting factor
(to be determined)

l : left input channel

r : right input channel

k : coherence measure
(time-varying, transmitted
as side information)

$$\alpha_{12} = \frac{-B \pm \sqrt{B^2 - 4AC}}{2A}$$

wherein:

$$L = \sum l^2 \quad R = \sum r^2 \quad C = \sum l \cdot r \quad \text{and}$$

$$A = C^2 - k^2 LR \quad B = 2LC(1 - k^2) \quad C = L^2(1 - k^2).$$

Fig. 2F (decoder side)

7/15

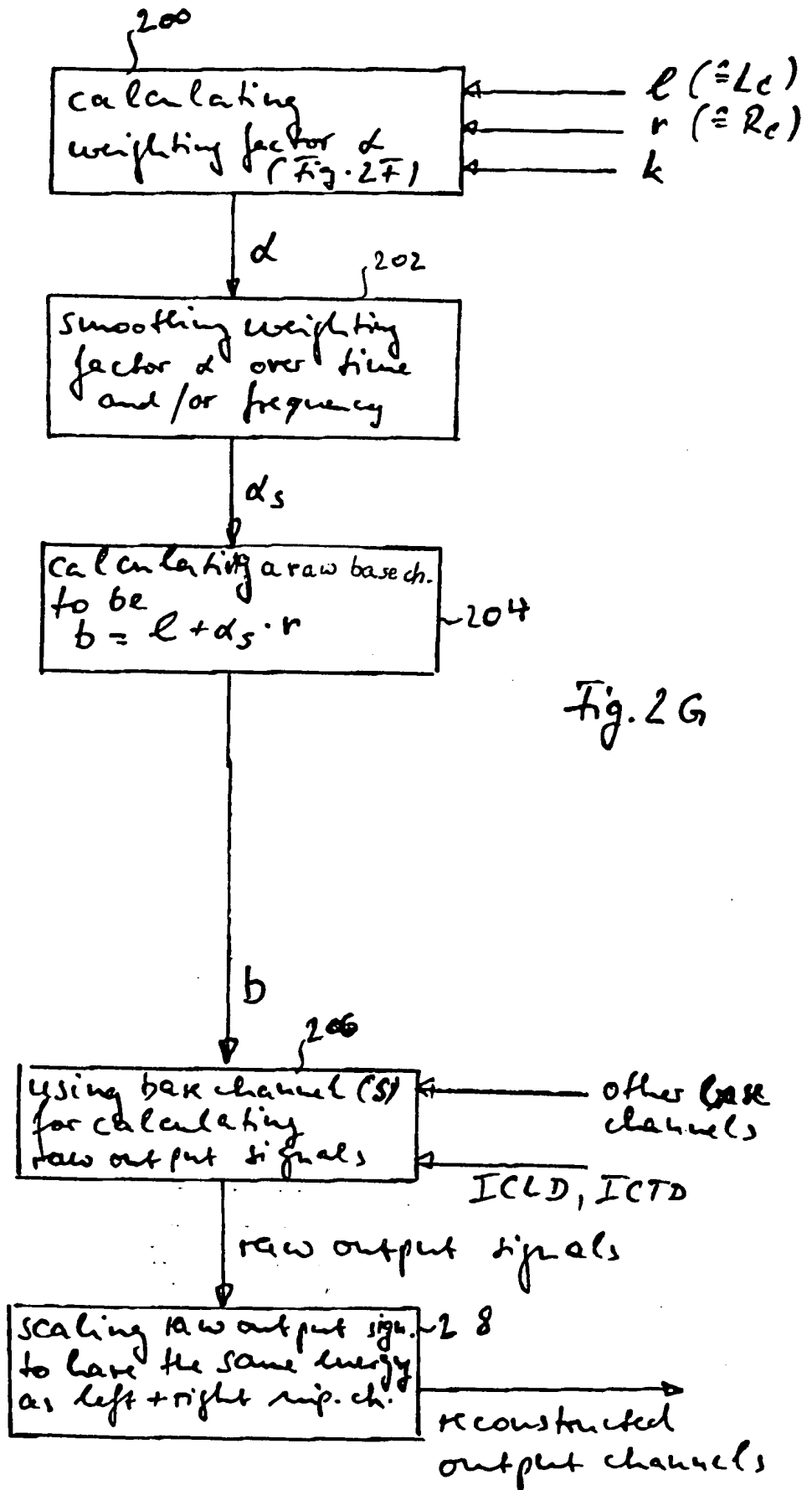


Fig. 2G

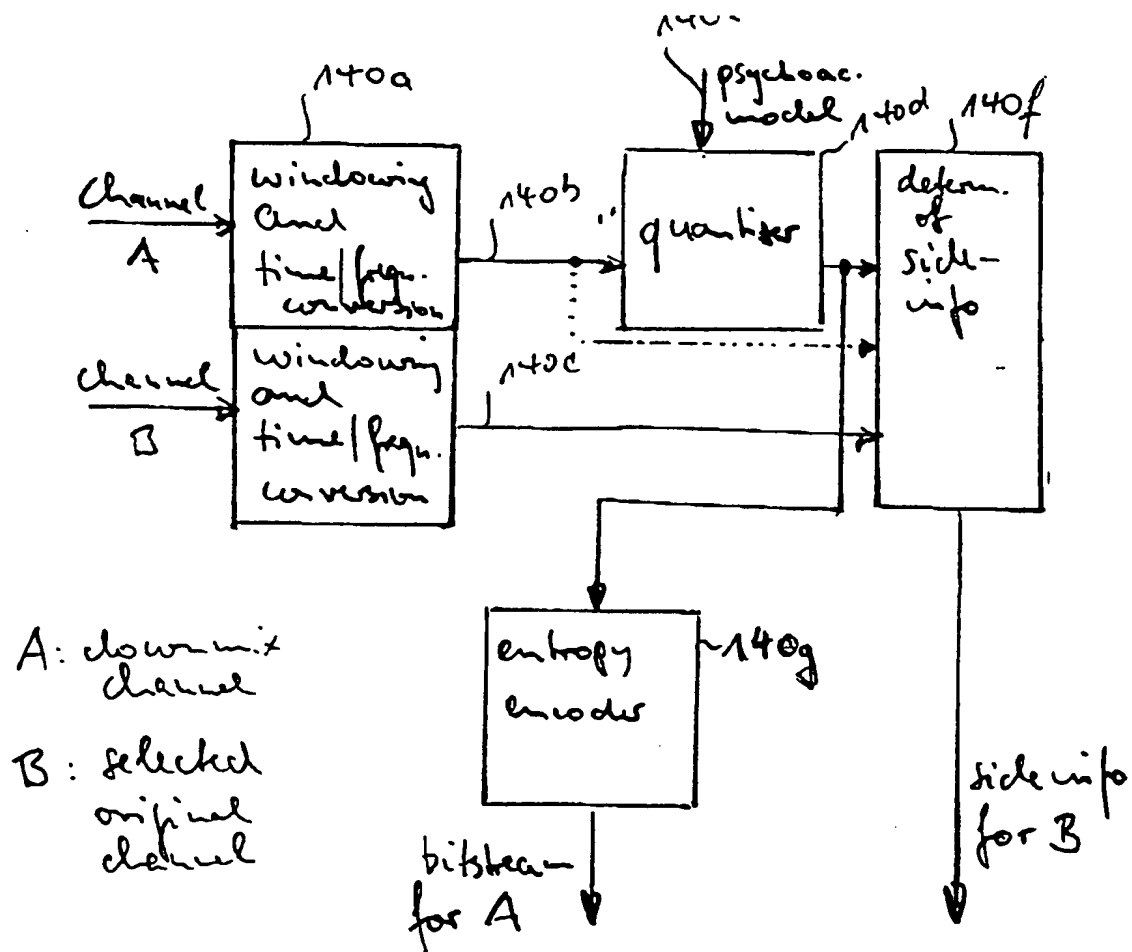


Fig. 3A

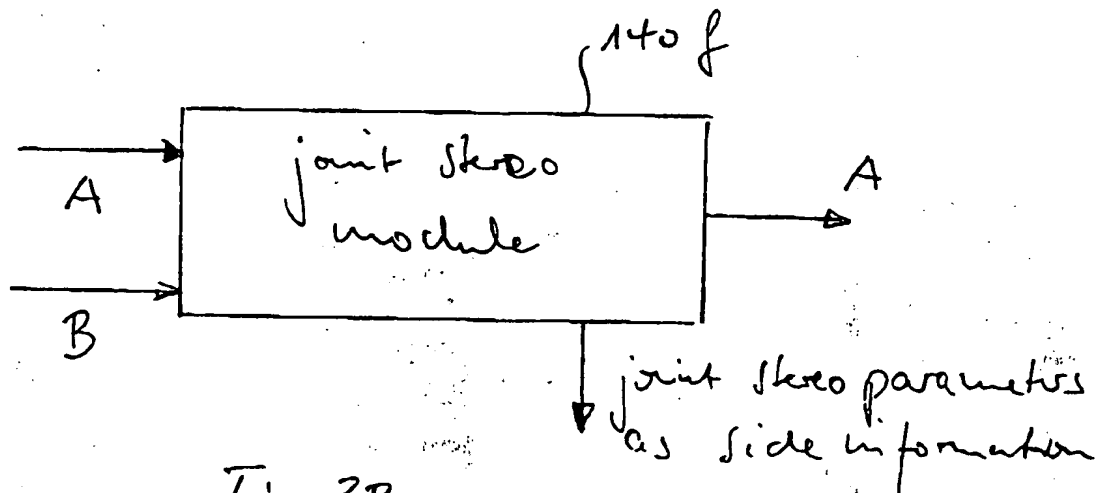


Fig. 3B

9/15

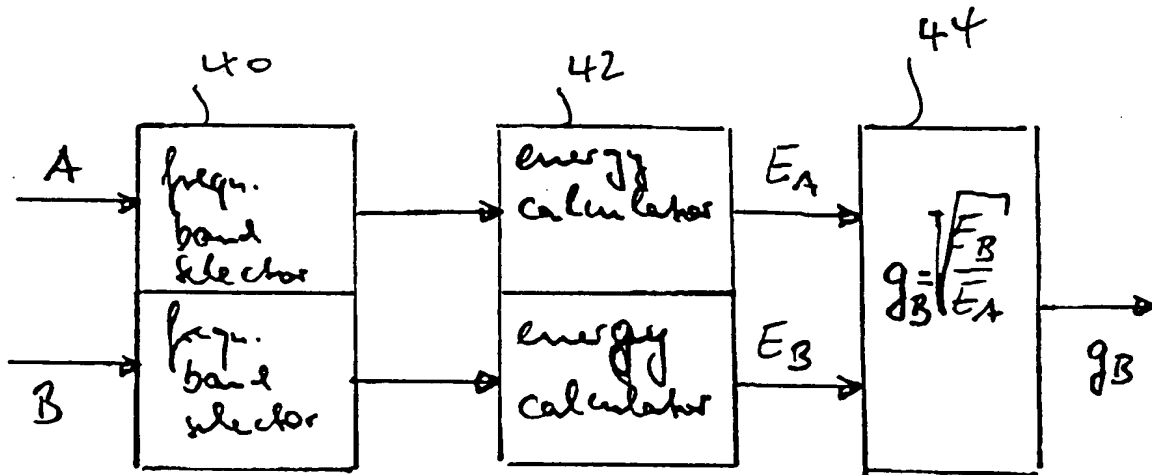


Fig. 4 (encoder side)

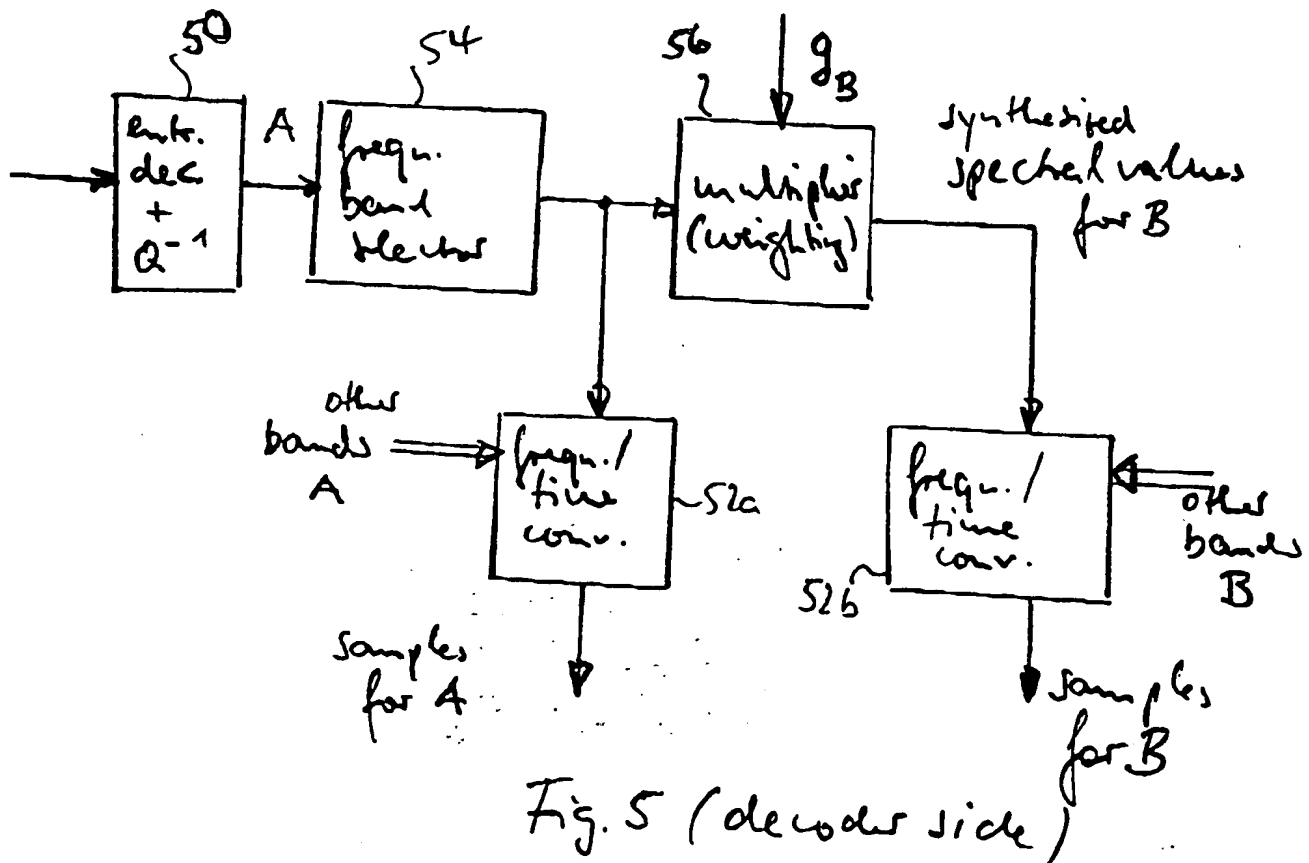


Fig. 5 (decoder side)

DOWN MIX

$$L_c = t \cdot [L + a \cdot L_s + b \cdot C]$$

$$R_c = t \cdot [R + a \cdot R_s + b \cdot C]$$

all signals are
time domain signals

$$a, b, t \leq 1$$

preferred: $a = b = 0,7$

or: $a = 0,5; b = 0,7$

Fig. 6

Ch. side info	CHANNEL B	CHANNEL A
	side info / parameters for:	are determined using:
l_i	L	L_c
l_{si}	L_s	L_c
r_i	R	R_c
r_{si}	R_s	R_c
c_i	C	$L_c + R_c$

Fig. 7

Fig. 8

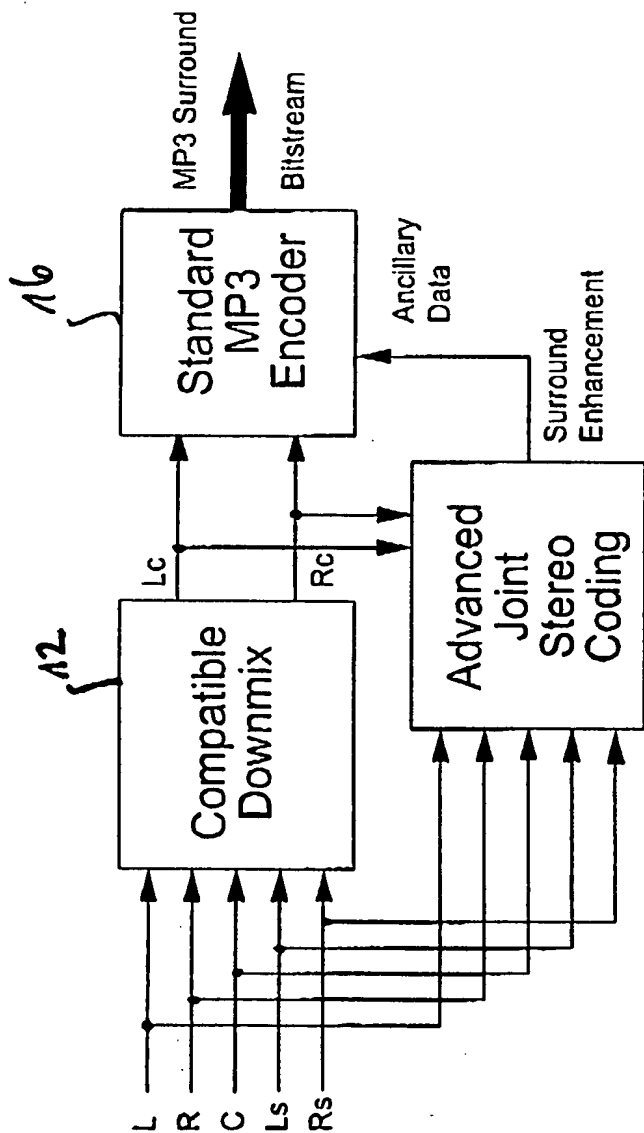
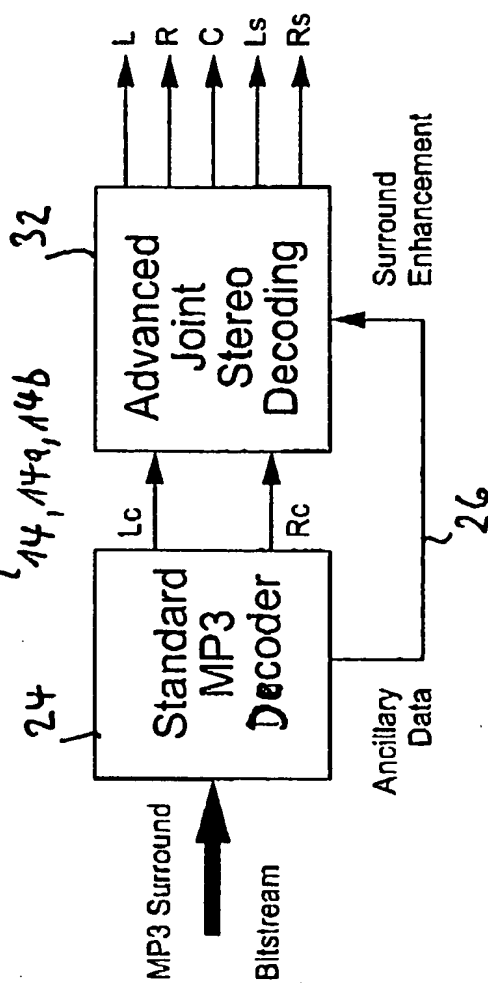


Fig. 9



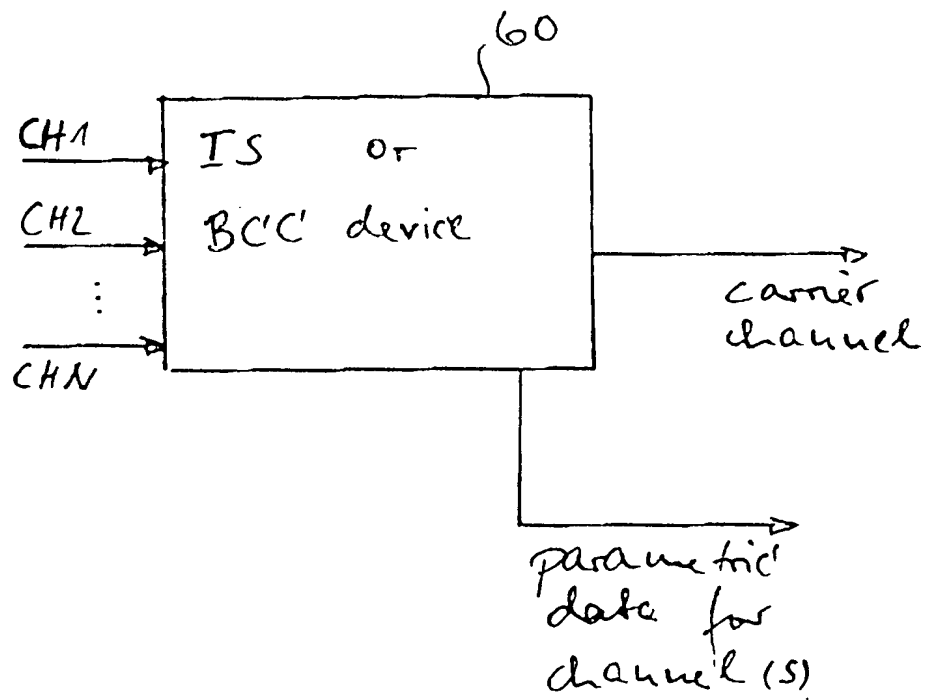


Fig. 10 (Prior Art)

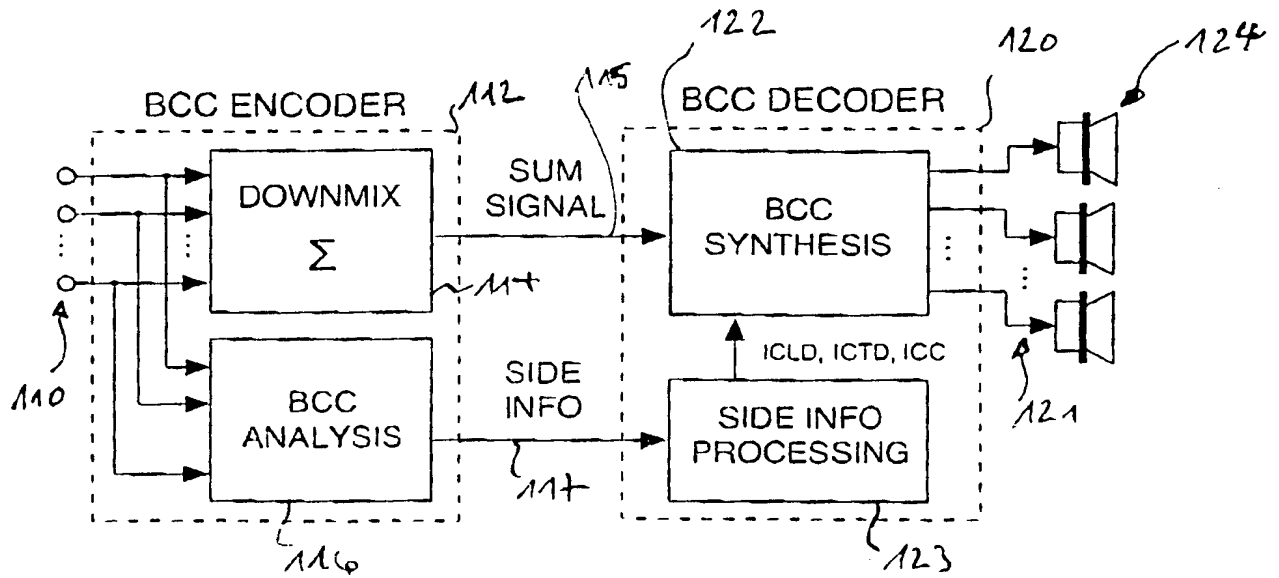


Fig. 11 (Prior Art)

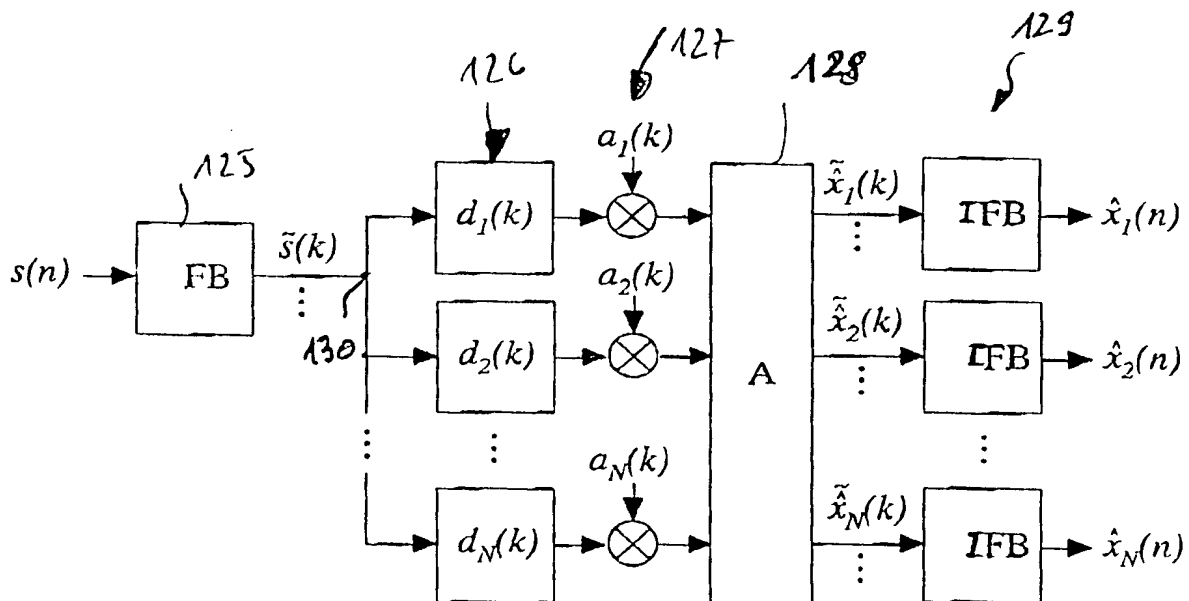
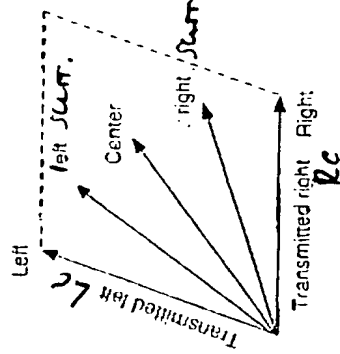


Fig. 12 (Prior Art)

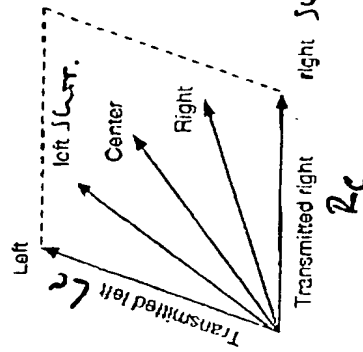
most independence
between
front left
and front
right. *sur.*



Base channels:
left = L
right = R
center = L + R
rear left = L + 0.7R
rear right = R + 0.7L

Fig. 15 A

most independence
between left
and
rear right



Base channels:
left = L
right = R + 0.7L
center = L + R
rear left = L + 0.7R
rear right = R

Fig. 15 B